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FEDERAL-STATE
COOPERATIVE SNOW SURVEYS and IRRIGATION WATER FORECASTS

for

COLORADO RIVER DRAINAGE BASIN

February 1, 1949

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by

Division of Irrigation, Soil Conservation Service
United States Department of Agriculture
and
Colorado Agricultural Experiment Station

Data included in this report were obtained by the agencies named above in cooperation with the U.S. Forest Service, National Park Service, State Engineers of Colorado, Wyoming and New Mexico and other Federal, State and local organizations.

WATER SUPPLY OUTLOOK
Colorado River Drainage
February 1, 1949

Snow accumulation on the headwaters of the Colorado River in Wyoming, Colorado and New Mexico has been much above average to February 1. Snow fall has been heaviest in Southwestern Colorado, up to twice the past average for this date. Relatively less has occurred on the Upper Colorado River and other tributaries. The valleys are snow-covered in all districts in Colorado and Wyoming. Soil moisture conditions are described as good to excellent throughout the basin.

Drought conditions have apparently been relieved in Arizona with the highest snow-water content on most courses since 1938. Reservoirs have been filling rapidly. Precipitation in valley areas has been above average.

COLORADO RIVER AND TRIBUTARIES IN COLORADO

Colorado River (Above Grand Junction): The snow cover on the Colorado River watershed above Grand Junction is 38 percent above normal and 21 percent over last year. The distribution of the snow over the watershed indicates somewhat less snow on the Roaring Fork and Blue River tributaries with heavier snow to the north of the main river. Snow on Grand Mesa is about 50 percent above normal for this date. However, it should be noted that about half of the snow on the watershed comes after February 1 on an average year and any estimate as to summer runoff must be subject to the snow that will come and other factors. If the present rate of snow accumulation continues the runoff of all Colorado River tributaries will be well above normal next snow-melt season. Current stream flow is reported as about normal. Valley areas are snow covered.

Gunnison River: The water supply situation on the Gunnison is favorable. Average snow-water content is 47 percent above normal and 49 percent more than a year ago. Recent precipitation has been high and range and crop conditions are reported as excellent. Storage in Taylor Reservoir is now 61,600 acre-feet, as compared to 91,000 on February 1, 1948.

Yampa and White Rivers: Snow-water content measured on the headwaters of the Yampa River is 61 percent above normal and 47 percent over a year ago. The valley areas are snow-covered and recent precipitation has been above normal with heavy snow in Moffat County. On the White River watershed the snow cover is somewhat less, probably 15 percent above normal and also 15 percent more than a year ago. The White River has relatively the least snow cover of the Colorado River tributaries up to February 1.

Miscellaneous Series Paper No. 427, Colorado Agricultural Experiment Station

San Juan and Animas Rivers: Snow fall has been very heavy throughout the San Juan Basin at all elevations. Snow-water contents measured on all courses average 88 percent above normal for the San Juan Basin. On the Animas River water contents are exactly 100 percent above the average for February 1. Soil moisture conditions are excellent. Vallecito Reservoir on the Pine River has in storage 57,500 acre-feet as compared to 72,000 a year ago. Stream flow is below normal due to low temperatures.

Dolores River: On the headwaters of the Dolores and San Miguel Rivers, the snow cover is over twice normal and over twice that a year ago. At Lizzard Head Pass, the snow-water content is 21 inches; 4 inches above the average for April 1. Soil moisture in the Cortez area is good. Precipitation has been above normal. Storage in reservoirs is down due to low stream flow.

COLORARO RIVER AND
TRIBUTARIES IN ARIZONA

The water supply outlook for Arizona is much improved after a drought covering three seasons. The snow on practically all courses is more than at any time since snow surveys were started in 1938. Precipitation has been above normal in the Salt River Valley and soil moisture, crop and range conditions are reported as good. Reservoirs are filling rapidly and a high snow-melt flow is expected. On February 1, stream flow was reported for the following rivers in second-feet as follows:

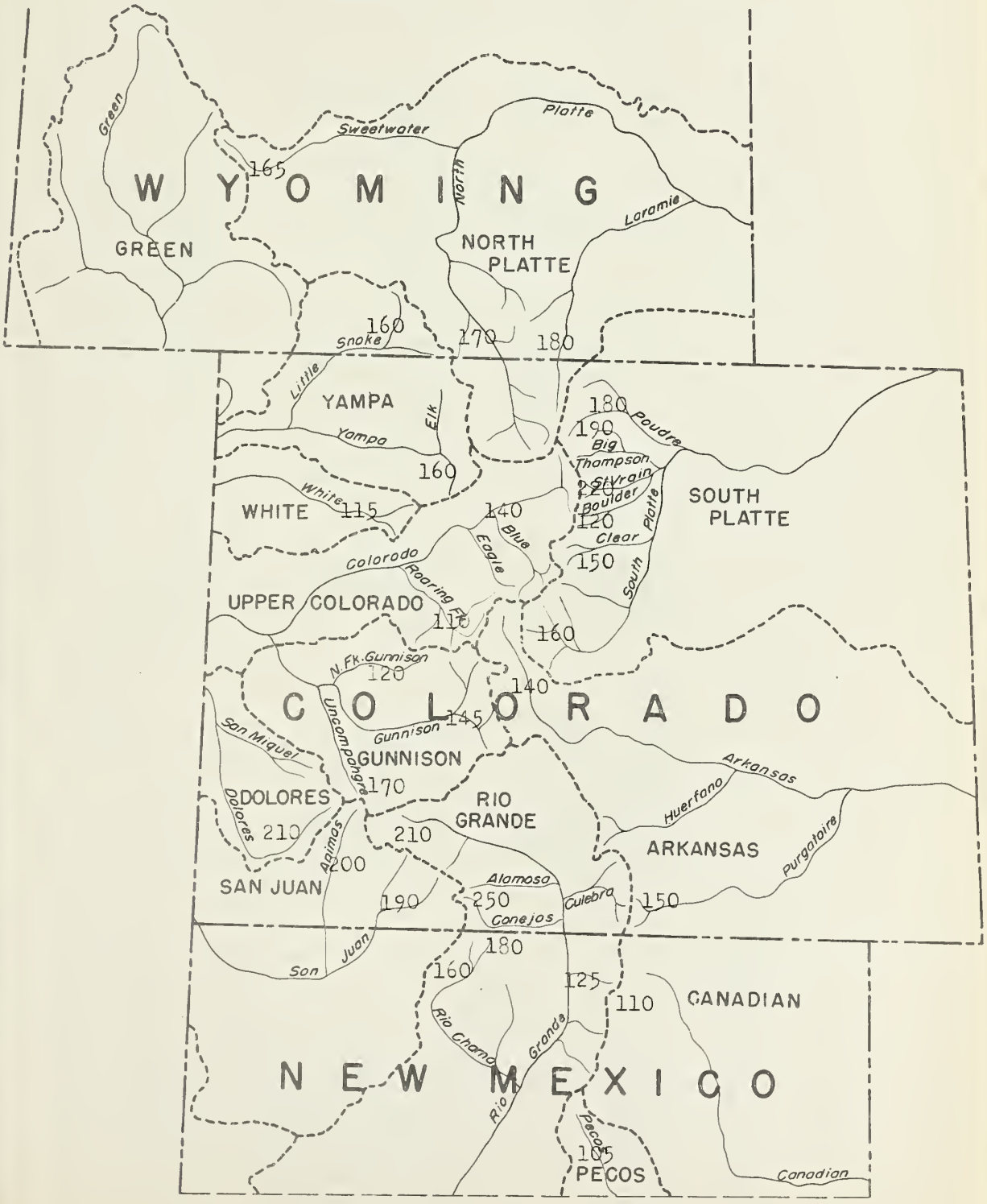
SALT: 353 TONTO: 325 VERDE: 493.

The flow of the Gila River is above normal. The Blue and San Francisco Rivers, tributaries to the Salt, were in flood stage in mid-January. Storage in the four major reservoirs on the Salt River is 308,000 acre-feet as compared to 231,000 a year ago. San Carlos Reservoir had 144,500 acre-feet in storage on January 1. Last year it was empty at this time, and on January 15, 1949 the storage was 32,000 acre-feet.

Net storage in Lake Mead on January 15, 1949 was 19,489,000 acre-feet. On February 1, 1948 it was 19,866,000.

WATER CONTENT OF SNOW ON THE WATERSHEDS OF
PLATTE, ARKANSAS, UPPER COLORADO AND RIO GRANDE BASINS
BASED ON SNOW SURVEYS MADE APPROXIMATELY FIRST DAY OF MONTH

In Percent of Normal
February 1, 1949



SNOW SURVEYS AND IRRIGATION WATER FORECASTS

COLORADO RIVER BASIN

STATUS OF RESERVOIR STORAGE, FEBRUARY 1, 1949

BASIN AND STREAM	RESERVOIR	USABLE CAPACITY (Thous.A.Ft.)	THOUSANDS ACRE FEET IN STORAGE About February 1				
			1949	1948	1947	1946	10-year Avg. 1938-47*
COLORADO DRAINAGE							
Taylor River	Taylor Park	106.2	61.6	91.0	66.5	82.5	57.6
Los Pinos River	Vallecito	126.3	57.5	72.0	57.3	38.6	37.0
Groundhog Creek	Groundhog	21.7	6.0	10.0	---	8.5	10.5
Blue River	Green Mountain	146.9		88.7	86.0	72.0	52.4
Colorado River	Lake Mead	27935.0	19489.0**	19866.0	17207.0	--	19236.0
Colorado River	Lake Havasu	688.0	592.0**	598.3	626.6	--	538.9
SALT AND GILA DRAINAGE							
Salt River	Roosevelt	1420.0	159.4	41.2	169.9	476.4	531.7
" "	Horse Mesa	245.0	103.8	150.4	208.1	223.3	189.1
" "	Mormon Flat	58.0	19.8	23.8	31.9	21.4	27.9
" "	Stewart Mt.	70.0	25.3	16.1	14.5	7.1	14.2
Verde River	Bartlett	200.0	34.0**	3.7	--	7.8	47.3
Aqua Fria River	Carl Pleasant	173.0	7.0**	0.8	2.9	3.4	15.7
Gila River	San Carlos	1200.0	144.4	0.0	17.0	26.1	213.0

*Some for shorter periods
**Net Storage, Jan. 15, 1949.

SNOW SURVEYS AND IRRIGATION WATER FORECASTS
for
COLORADO RIVER BASIN
February 1, 1949

SUMMARY OF FEBRUARY 1 SNOW SURVEYS AND COMPARISON OF DATA WITH THAT OF PREVIOUS YEARS
BY WATERSHEDS

WATERSHEDS	Snow Depth			Water Content			Number Courses in Average	Snow Density			1949 Water Content in percent of	
	Thirteen year Avg.*	1948	1949	Thirteen year Avg.*	1948	1949		Thirteen year Avg.*	1948	1949	Thirteen year Avg.*	1948
COLORADO RIVER	In.	In.	In.	In.	In.	In.		Percent	Percent	Percent		
Colorado River**	35.6	41.0	41.8	8.1	9.3	11.2	11	23	23	27	138	121
Roaring Fork	40.0	45.4	41.0	9.5	9.6	10.5	1	24	21	26	111	110
Yampa River	50.0	48.2	67.2	12.9	14.1	20.8	3	26	29	31	161	147
White River	42.3	39.7	41.5	10.3	10.3	11.6	1	24	26	28	113	113
Gunnison River	33.5	31.1	43.4	7.5	7.4	11.0	7	22	24	25	147	149
Dolores River	28.0	24.8	40.2	6.0	5.9	12.4	3	22	24	31	207	210
San Juan River	32.6	31.3	57.1	8.1	7.8	15.2	7	25	25	27	188	195
Animal River	26.0	26.2	43.7	5.7	5.6	11.5	3	22	21	26	200	204
Gila River	10.7	6.8	29.6	2.6	1.6	8.0	4	24	24	27	308	500
Salt River	9.3	3.1	23.5	2.4	0.8	6.3	5	26	26	27	262	787
Verde River	4.4	4.1	40.9	1.0	1.1	11.6	6					
Little Colo.River	8.7	3.0	21.6	2.3	0.8	5.8	3					
Williams River	0.0	0.0	28.1	0.0	0.0	8.1	3					

**Above Grand Junction *Some for shorter periods.

PRECIPITATION DATA

WATERSHED	STATE	Precipitation* October 1 to January 31	Departure from Normal	Precipitation* January	Departure from Normal
		Inches	Inches	Inches	Inches
Colorado	Colorado	7.50	+1.85	2.72	+1.24
Green	Wyoming	3.87	+0.95	1.14	+0.50
San Juan	New Mexico	4.64	+1.09	1.93	+1.09
Colorado	Arizona	6.98	+1.79	3.43	+1.97
Gila	Arizona	7.73	+2.44	3.54	+1.93

The accumulated precipitation since October 1 over the watershed of the Colorado River was above normal. Precipitation was above normal over the entire drainage basin for January.

*Precipitation tentative.

COLORADO RIVER DRAINAGE SNOW SURVEYS

February 1, 1949

Drainage Basin and Snow Course	Location: No. and State	Sec.	Twp.	Range	Elec.	Date of Survey	Snow Cover Measurements: Snow Depth (Inches)	Water Content (Inches) 1949	1948	1947	Past Record: Yrs. of Rec.	Av. Water Content (Inches)
COLORADO RIVER												
COLORADO RIVER (above Grand Junction)												
Cameron Pass*	1 Colo.	2	6N	76W	10300	1/27	50.7	16.5	13.5	14.2	10	11.3
Park View*	7 "	24	5N	78W	9200	1/27	37.4	8.6	--	6.8	11	5.1
Phantom Valley	12 "	7	5N	75W	9300	1/31	37.8	10.2	7.2	4.8	13	5.2
Hoosier Pass	14 "	13	8S	78W	11400	1/31	35.3	8.3	6.6	5.4	10	5.7
Berthoud Pass	16 "	35	2S	75W	9700	1/31	42.9	10.4	10.1	6.8	13	8.7
Tennessee Pass	19 "	21	8S	80W	10200	1/30	32.6	6.8	4.6	5.2	13	4.6
Ind. Pass Tunnel	33 "	30	11S	82W	10200	2/1	41.0	10.5	9.6	11.5	13	9.5
N. Lost Trail Cr.	34 "	20	11S	87W	9200	--	--	--	--	8.4	12	7.3
M. Fork Camp Gr.	37 "	16	3S	77W	9000	2/3	32.3	6.9	--	5.3	12	5.7
Fiddler Gulch	44 "	1	8S	80W	11000	2/1	44.0	12.0	--	9.3	12	8.0
Nast	45 "	1	9S	83W	8700	2/1	26.0	5.6	--	4.9	12	3.9
Mesa Lakes	56 "	35	11S	96W	10000	2/1	45.1	12.9	10.0	10.0	12	9.0
Lulu	59 "	25	6N	76W	10200	1/31	48.5	15.2	--	9.2	9	10.4
Willow Creek P.	62 "	1	4N	78W	9500	1/27	44.7	12.4	--	8.0	9	6.8
N. Inlet Grand L.	64 "	26	4N	75W	9000	1/28	33.4	9.1	--	5.6	10	4.9
Lake Irene	65 "	8	5N	75W	10600	1/30	57.1	19.3	--	13.6	10	11.9
Thunderbolt Peak	66 "	22	2N	74W	9500	2/4	57.9	18.1	--	12.4	10	9.6
Arrow	69 "	34	1S	75W	9900	1/31	35.7	7.5	--	5.6	10	5.0
Lapland	70 "	16	2S	76W	9300	2/1	35.6	7.3	--	6.0	8	5.8
Fremont Pass #2	79 "	2	8S	79W	11400	1/27	43.3	10.5	9.4	9.0	13	8.2
Trickle Divide	85 "	23	11S	94W	10000	--	--	--	15.0	21.1	9	15.4
Lynx Pass	91 "	27	2N	83W	9100	1/31	40.6	11.6	--	6.6	12	7.3
Shrine Pass	96 "	15	6S	79W	10500	1/27	42.4	10.9	12.1	7.5	7	9.2
Grizzly Peak	97 "	2	5S	76W	11250	1/28	44.1	13.0	10.3	9.9	7	9.3
Ivanhoe	100 "	12	9S	82W	10400	1/31	45.1	13.7	9.0	8.1	3	8.0
Glen-Mar Ranch	102 "	31	12S	77W	8850	2/2	33.8	7.5	--	6.1	1	6.1
Monarch Lake	106 "	30	2N	94W	8500	--	--	--				
Granby	113 "	11	2N	77W	8700	1/28	29.4	6.4				
Grand Lake	127 "	36	4N	75W	8600	1/31	35.4	8.7				
Average for drainage							41.8	11.2	9.3	8.5		8.1

*On adjacent drainage

COLORADO RIVER SNOW SURVEYS

February 1, 1949

Drainage Basin and Snow Course	Location: No. and State	Sec.	Twp.	Range	Elev.	Date of Survey	Snow Depth (Inches)	Snow Cover Measurements: Water Content (Inches) 1949	1948	1947	Past Record: Yrs. of Rec.	Av. Water Content (Inches)
YAMPA RIVER												
Dry Lake	6 Colo.	26	7N	84W	8200	2/1	50.5	16.1		8.8	8	10.1
Columbine Lodge	8 "	21	5N	82W	9300	2/1	61.0	19.6	15.8	10.9	13	12.9
Elk River	9 "	6	10N	85W	8700	2/1	49.3	14.5	8.9	10.1	10	8.7
Lynx Pass	91 "	27	2N	83W	9100	1/31	40.6	11.6	--	6.6	12	7.3
Old Battle	9 Wyo.	29	14N	85W	9800	1/26	91.3	28.1	17.7	21.2	11	17.0
			Average	for drainage			67.2	20.8	14.1	14.1		12.9
WHITE RIVER												
Burro Mountain	35 Colo.	15	2S	91W	9000	1/31	41.5	11.6	10.3	10.8	13.	10.3
Rio Blanco	36 "	28	1N	88W	8500	2/1	48.4	14.4	--	10.2	9	8.5
			Average	for drainage			41.5	11.6	10.3	10.8		10.3
ROARING FORK												
Ind. Pass Tunnel	33 Colo.	30	11S	82W	10200	2/1	41.0	10.5	9.6	11.5	13	9.5
N. Lost Trail Cr.	34 "	20	11S	87W	9200					8.4	12	7.3
Nast	45 "	1	9S	83W	8700	2/1	26.0	5.6	--	4.9	12	3.9
Ivanhoe	100 "	12	9S	82W	10400	1/31	45.1	13.7	9.0	8.1	3	8.0
			Average	for drainage			41.0	10.5	9.6	11.5		9.5
GUNNISON RIVER												
Crested Butte	18 Colo.	22	13S	86W	9000	2/1	40.2	9.9	5.7	6.1	13	7.0
Marshall Creek	42 "	24	48N	6E	10800	1/30	39.1	10.1	5.8	5.2	13	6.6
Poncha Creek*	43 "	19	48N	7E	10500	1/30	33.2	9.1	6.2	4.3	13	6.2
Park Cone	46 "	19	14S	82W	9700	1/31	37.4	8.0	5.4	4.9	13	4.6
Alexander Lake	53 "	2	12S	25W	10000	2/2	61.4	17.7	13.5	17.8	12	12.4
Snowshoe Mesa	55 "	14	13S	89W	7500	1/30	30.1	6.9	--	3.9	11	5.7
Ironton Park	58 "	29	43N	7W	9800	1/29	44.0	11.6	6.2	5.0	12	6.9
Trickle Divide	85 "	23	11S	94W	10000	--	--	--	15.0	21.1	9	15.4
Park Reservoir	87 "	34	11S	94W	9500	--	--	--	14.0	20.1	9	14.4
Porphyry Creek	89 "	19	49N	6E	10800	1/29	48.6	10.9	9.0	7.1	9	8.6
Lake City	104 "	13	43N	4W	10300	2/1	34.3	7.5				
Spring Cr. Pass	123 "	2	42N	3W	10900							
Cochetopa Pass	126 "	12	45N	3E	10000	2/2	26.1	5.0				
			Average	for Drainage			43.4	11.0	7.4	7.2		7.5

*On adjacent drainage

COLORADO RIVER SNOW SURVEYS, February 1, 1949

Drainage Basin and Snow Course	LOCATION No. and State	Sec.	Twp.	Range	Elev.	Date of Survey	Snow Depth (Inches)	SNOW COURSE MEASUREMENTS Water Content (Inches) 1949	1948	1947	Past Record Yrs. of Record	Av. Water Content (Inches)
						COLORADO RIVER		In.	In.	In.		
SAN JUAN RIVER												
Wolf Creek Pass*	26 Colo.	4	37N	2E	10000	1/31	91.5	27.2	14.0	16.1	9	14.3
Upper San Juan	29 "	10	37N	1E	10000	1/31	108.3	31.3	18.0	16.7	9	16.5
Silverton Sub.S.	30 "	10	41N	7W	9400	1/31	24.4	6.1	3.0	4.3	10	3.6
Cascade	31 "	12	39N	9W	8850	1/31	62.7	16.6	7.5	6.8	10	6.5
Granite Peaks	93 "	24	37N	6W	7950	1/31	41.0	8.3	5.0	1.5	7	5.8
Chama Divide*	17 N.Mex.		36.9N	106.7W	7750	1/31	31.1	6.7	2.7	2.8	9	4.1
Chamita*	18 "		36.9N	106.7W	8500	2/1	40.5	10.0	4.5	6.5	7	5.9
		Average for Drainage					57.1	15.2	7.8	7.8		8.1
ANIMAS RIVER												
Silverton Sub.S.	30 Colo.	10	41N	7W	9400	1/31	24.4	6.1	3.0	4.3	10	3.6
Cascade	31 "	12	39N	9N	8850	1/31	62.7	16.6	7.5	6.8	10	6.5
Ironton Park	58 "	29	43N	7W	8700	1/29	44.0	11.6	6.2	5.0	12	6.9
		Average for Drainage					43.7	11.4	5.6	5.4		5.7
DOLORES RIVER												
Rico	23 Colo.	11	39N	11W	8700	2/3	31.5	8.5	4.2	4.2	9	5.4
Telluride	24 "	6	42N	8W	8600	1/31	34.8	7.8	3.9	3.8	10	4.6
Lizard Head	25 "	24	41N	10W	10300	2/3	54.2	20.9	9.6	6.3	10	8.1
Trout Lake	114 "	8	41N	9W	9700	1/31	57.7	11.8				
		Average for Drainage					40.2	12.4	5.9	4.8		6.0
GILA RIVER												
Frisco Divide	11 N.Mex.	21	6S	20W	8000	1/31	24.1	5.8	2.1	1.1	11	2.2
State Line	14 "	6	6S	21W	8000	1/31	28.8	7.7	1.5	1.8	11	2.8
Taylor Creek	22 "	20	10S	10W	7850		--	--	0.9	1.1	7	0.9
Inman	23 "	6	11S	10W	7800		--	--	1.0	0.6	3	1.2
Nutrioso	3 Ariz.	23	6N	30E	8500	1/31	29.1	8.1	1.0	1.6	11	2.2
Beaver Head	4 "	13	4N	30E	8000		--	--	1.5	1.6	11	
Coronado Trail	5 "	26	5N	30E	8000	1/31	36.3	10.5	1.7	2.2	11	3.4
		Average for Drainage					29.6	8.0	1.6	1.7		2.6
SALT RIVER												
McNary	6 Ariz.	14	8N	23E	7200	1/31	21.5	5.5	0.8	3.2	10	3.3
Forestdale	7 "	2	9N	21E	6000	1/31	14.3	3.8	0.5	1.1	8	1.4
Milk Ranch	9 "	28	8N	23E	7000	1/31	16.5	3.8	T	1.4	8	1.9
Nutrioso*	3 "	23	6N	30E	8500	1/31	29.1	8.1	1.0	1.6	11	2.2
Coronado Trail*	5 "	26	5N	30E	8000	1/31	36.3	10.5	1.7	2.2	11	3.4
*On adjacent drainage		Average for drainage					23.5	6.3	0.8	1.9		2.4

COLORADO RIVER SNOW SURVEYS
February 1, 1949

Drainage Basin and Snow Course	Location: No. and State	Sec.	Twp.	Range	Elev.	Snow Course Measurements: Date of Survey	Snow Depth (Inches)	Water Content (Inches): 1949	1948	1947	Past Record: Years of Record	Av. Water Content (Inches)
								In.	In.	In.		
COLORADO RIVER												
VERDE RIVER												
Iron Springs*	11 Ariz.	22	14N	3W	6200	1/29	32.5	9.6	0	0	3	0
Camp Wood	12 "	3	16N	6W	5700	2/1	32.7	8.6	0	0	3	0
Mingus Mountain	"	3	15N	2E	7100	2/1	35.6	10.4	0	0	2	0
Mormon Lake*	"	13	18N	8E	7350	2/1	66.8	20.0	3.8	3.4	2	3.6
Fort Valley*	"	22	22N	6E	7350	2/1	38.8	10.2	0.3	1.0	2	2.0
Chalender*	"	27	22N	3E	7100	2/1	38.9	10.8	2.6	1.4	2	2.0
Average for Drainage							40.9	11.6	1.1	1.0		1.0
LITTLE COLORADO RIVER												
Forest Dale*	7 Ariz.	2	9N	21E	6000	1/31	14.3	3.8	0.5	1.1	8	1.4
McNary	6 "	14	8N	23E	7200	1/31	21.5	5.5	0.8	3.2	10	3.3
Nutrioso*	3 "	23	6N	30E	8500	1/31	29.1	8.1	1.0	1.6	11	2.2
Mormon Lake	"	13	18N	8E	7350	2/1	66.8	20.0	3.8	3.4	2	3.6
Fort Valley	"	22	22N	6E	7350	2/1	38.8	10.2	0.3	1.0	2	0.6
Bright Angel	Ariz.	34	33N	3E	8400	2/1	48.7	12.7	5.0	--	1	--
Grand Canyon	Ariz.	21	30N	4E	75.0	2/1	32.4	8.7	0.9	--	1	--
Average for Drainage							21.6	5.8	0.8	2.0		2.3
WILLIAMS RIVER												
Iron Springs	11 Ariz.	22	14N	3W	6200	1/29	32.5	9.6	0	0	3	0.
Camp Wood*	12 "	3	16N	6W	5700	2/1	32.7	8.6	0	0	3	0
Willow Ranch	"	16	21N	11W	5000	1/29	19.0	6.0	0	--	2	0
Average for Drainage							28.1	8.1	0	0		0

*On adjacent drainage

The following organizations cooperate in the snow surveys and irrigation water supply forecasts for the Colorado, Missouri-Arkansas and Rio Grande watersheds by furnishing funds or services.

STATE
- Colorado State Engineer
- Wyoming State Engineer
- Utah State Engineer
- New Mexico State Engineer
- Montana State Engineer
- Nebraska State Engineer
- Colorado Experiment Station
- Colorado Extension Service
- Montana Experiment Station
- Utah Experiment Station

FEDERAL
- Department of Agriculture
  - Forest Service
  - Soil Conservation Service
- Department of Interior
  - Bureau of Reclamation
  - Geological Survey
  - National Park Service
- Department of Commerce
  - Weather Bureau
- War Department
  - Army Engineer Corps

PUBLIC UTILITIES
- Colorado Public Service Company
- Western Colorado Power Company
- Montana Power Company
- Public Service Company of New Mexico
- Denver and Rio Grande Western R. R. Company

MUNICIPALITIES
- City of Bozeman
- City of Denver
- City of Boulder

WATER USERS ORGANIZATIONS
- Poudre Valley Water Users' Association
- Arkansas Valley Ditch Association
- Colorado River Water Conservation District

IRRIGATION PROJECTS
- Farmers Reservoir and Irrigation Company
- San Luis Valley Irrigation District
- Santa Maria Reservoir Company
- Costilla Land Company
- Uncompahgre Valley Water Users' Association
- Wyoming Development Company
- Goshen Irrigation District
- Mendrick Project
- Pathfinder Irrigation District
- Salt River Valley Water Users' Association
- San Carlos Irrigation and Drainage District
- Twin Lakes Reservoir and Canal Company

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